Please find below and/or attached an Office communication concerning this application or proceeding.

		Application No	Applicant(s)
Office Action Summary		09/384,699	TZENG ET AL.
		Examiner	Art Unit	
		George C Neurauter, Jr.	2143	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) FROM
THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed
  after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any
  earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>12 June 2003</u> .

2a)☒ This action is **FINAL**.   2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is
closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) <u>1-22</u> is/are pending in the application.

   4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) <u>1-22</u> is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

   Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

   If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

   a)☐ All b)☐ Some * c)☐ None of:

   1.☐ Certified copies of the priority documents have been received.

   2.☐ Certified copies of the priority documents have been received in Application No. _____ .

   3.☐ Copies of the certified copies of the priority documents have been received in this National Stage
   application from the International Bureau (PCT Rule 17.2(a)).

   * See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

   a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1)☐ Notice of References Cited (PTO-892)

2)☒ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .

4)☐ Interview Summary (PTO-413) Paper No(s). _____ .

5)☐ Notice of Informal Patent Application (PTO-152)

6)☐ Other: .

DETAILED ACTION

Response to Arguments

1.   Applicant's arguments filed 12 June 2003 have been fully considered but they are

not persuasive.

In response to Applicant's argument that Naron does not teach a commit server

or the methods as claimed, the Examiner does not agree. Naron discloses a commit

server and methods in the context of the invention that further distinguish the

disclosures cited in the previous Office Action [column 3, line 15-column 4, line 9;

column 14, line 3-column 16, line 16; column 21, lines 1-5; column 21, line 59-column

22, line 6].

In response to Applicant's argument regarding the Office Action rejection of

claims 15 and 16, the Examiner notes that claim 15 does in fact contain the exact same

limitations as recited in claim 16. The Applicant admits this on pages 15 and 16 of the

response filed 12 June 2003. Claim 16 was rejected in the Office Action showing all

limitations as originally claimed [see page 9]. Claim 15 is a broader claim that contains

the same limitations that are recited in claim 16. Therefore, the references applied to

claim 16 also apply to claim 15.

Claim Rejections - 35 USC § 102

2.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that

form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3.   Claims 1-22 are rejected under 35 U.S.C. 102(b) as being anticipated by

Naron et al. [US Patent 4 807 224 A].

Regarding claim 1, Naron discloses a method for multicasting data messages to

members of a multicast group, the multicast group comprising a sequencer, one or

more clients, one or more data servers, and one or more commit servers, the method

comprising the steps of:

transmitting a first data message to the members of the multicast group; each

data server that receives the first data message requesting the sequencer to assign a

first sequence number to the first data message, the first sequence number being from

a sequence of numbers allocated to the data messages, said first sequence number

following all sequence numbers assigned prior to assignment of the first sequence

number; assigning the first sequence number to the first data message, in response to

the sequencer receiving a first quantity of the requests to assign a first sequence

number to the first data message; notifying the commit servers of the assignment of the

first sequence number to the first data message; each of the commit servers sending to

the sequencer an acknowledgment of the notification of the assignment of the first

sequence number to the first data message, in response to being notified of the

assignment of the first sequence number to the first data message; committing the first

sequence number to the first data message, in response to the sequencer receiving a

second quantity of the acknowledgments of the notification of the assignment of the first

sequence number to the first data message; and informing the members of the multicast

group of the commitment of the first sequence number to the first data message.

[column 3, line 15-column 4, line 9; column 5, lines 22-47; column 8, line 50-column 9,

line 12; column 14, line 3-column 16, line 16; column 21, lines 1-5; column 21, line 59-

column 22, line 6]

Claim 7 is rejected under 35 USC 102(b) since claim 7 contains the same

limitations as recited in claim 1.

Regarding claim 2, Naron discloses a method according to Claim 1, wherein said

step of each data server that receives the first data message requesting the sequencer

to assign a first sequence number to the first data message includes the step of

sending, from said each data server that receives the first data message to the

sequencer, a data report message identifying the first data message; said step of

notifying the commit servers of the assignment of the first sequence number includes

the step of submitting to the comnut servers a commit submit message identifying the

first data message; said step of sending to the sequencer an acknowledgment of the

notification of the assignment of the first sequence number includes the step of sending

to the sequencer a commit acknowledge message identifying the first data message;

and said step of informing the members of the multicast group of the commitment of the

first sequence number includes the step of sending a commit message identifying the

first data message to the members of the multicast group. [column 8, line 62-column 9,

line 12]

Regarding claim 3, Naron discloses a method according to Claim 2, further

comprising the step of transmitting a second data message to the members of the

multicast group; wherein said step of sending, from said each data server that receives

the first data message to the sequencer, a data report message identifying the first data

message further includes the step of a first data server sending a first data report

message identifying the first data message to the sequencer after said first data server

receives the second data message, said first data report message also identifying the

second data message. [column 8, line 62-column 9, line 12]

Regarding claim 4, Naron discloses a method according to Claim 2, further

comprising the steps of transmitting a second data message to the members of the

multicast group; each data server that receives the second data message requesting

the sequencer to assign a second sequence number, the second sequence number

being from the sequence of numbers allocated to the data messages, said second

sequence number following all sequence numbers assigned prior to assignment of the

second sequence number, to the second data message, said step of each data server

that receives the second data message requesting the sequencer to assign a second

sequence number to the second data message, includes the step of sending from said

each data server that receives the second data message to the sequencer a data report

message identifying the second data message; assigning the second sequence number

to the second data message, in response to the sequencer receiving a third quantity of

the requests to assign a second sequence number to the second data message;

wherein said step of notifying the commit servers of the assignment of the first

sequence number further includes the step of notifying the commit servers of the

assignment of the second sequence number, said commit submit message identifying

the first data message also identifying the second data message. [column 8, line 62-column 9, line 12]

Regarding claim 5, Naron discloses a method according to Claim 2, wherein the members of the multicast group deliver the data messages to their respective upper layer applications in order of progressing sequence numbers, further including the step of using a receiver driven, negative acknowledgment based approach to improve reliability of delivery of the data messages. [column 18, lines 15-47]

Regarding claim 6, Naron discloses a method as in any one of Claims 1-5, wherein said data servers store said data messages transmitted to the multicast group, the multicast group further comprising checkpoint servers, the method further including the steps of step for message consolidation;   step for garbage collection; and step for storing said first sequence number in stable storage. [column 5, lines 22-47; column 14, lines 13-27; column 19, lines 21-38]

Claim 8 is rejected under 35 USC 102(b) since claim 8 contains the same limitations as recited in claims 5 and 6 in combination.

Claim 12 is rejected under 35 USC 102(b) since claim 12 contains the same limitations as recited in claim 6.

Regarding claim 9, Naron discloses a method according to Claim 8, wherein said each data message is associated with a unique message ID and is identifiable from its associated message m, the step of using further includes the steps of each member of the multicast group identifying gaps in a progression of sequence numbers known by said each member of the multicast group to have been committed to data messages

received by said each member of the multicast group; if said each member of the

multicast group does not know a first message m, said first message m being

associated with a first data message, a first sequence number within one of said gaps

having been previously committed to said first data message, said each member of the

multicast group querying one of said commit servers to obtain said first message ID;

and if said each member of the multicast group has not received said first data

message, querying one of said data servers to retrieve said first data message. [column

5, lines 22-47, specifically lines 37-47]

Claim 10 is rejected under 35 USC 102(b) since claim 10 contains the same

limitations as recited in claim 9.

Regarding claim 11, Naron discloses a method according to Claim 10, further

comprising the step of said sequencer periodically generating and sending heartbeat

messages to the members of the multicast group, each said heartbeat message

containing an associated largest sequence number, said associated largest sequence

number being the last sequence number committed at a time substantially equal to a

time said heartbeat message is generated. [column 9, line 28-column 12, line 3]

Regarding claim 13, Naron discloses a method according to Claim 8, wherein the

multicast group further comprises one or more checkpoint servers, the method further

comprising the step of performing periodic message consolidation by said checkpoint

servers at message intervals determined through a common consensus protocol, each

message consolidation producing a checkpoint associated with said each message

consolidation, said checkpoint associated with said each message consolidation

corresponding to a terminal data message, said checkpoint associated with said each message consolidation containing checkpoint information, the checkpoint information being sufficient for a first upper layer application of said upper layer applications to reconstruct a cumulative system state said first upper layer application would attain upon receiving said terminal message and all said data messages that preceded said terminal message. [column 5, lines 22-47, specifically lines 37-47; column 9, line 28-column 12, line 3, specifically column 10, line 46-column 11, line 4]

Regarding claim 14, Naron discloses a method according to Claim 13, further comprising the step of said checkpoint servers periodically generating and sending checkpoint reports to said sequencer, each checkpoint report corresponding to latest checkpoint at the time said each checkpoint report is generated, said each checkpoint report identifying a sequence number of its corresponding terminal data message, said each checkpoint report carrying size data of the latest checkpoint. [column 9, line 28-column 12, line 3; column 19, line 52-column 20, line 15]

Regarding claim 16, Naron discloses a method according to Claim 14, further comprising the step of synchronizing a first asynchronous upper layer process of a first asynchronous member of the multicast group with other members of the multicast group, said first asynchronous member not being said sequencer or one of said data or commit servers, said synchronizing step including the steps of said first asynchronous member retrieving a first checkpoint from said checkpoint servers; said first asynchronous process retrieving all committed data messages following terminal data message corresponding to the first checkpoint; delivering said first checkpoint to said

first asynchronous upper level process; delivering said all committed data messages

following the terminal data message corresponding to the first checkpoint to said first

asynchronous upper level process; and said first asynchronous upper level process

processing said delivered checkpoint and said delivered data messages to achieve a

system state identical to system states of other members of the multicast group.

[column 5, lines 22-47, specifically lines 37-47; column 9, line 28-column 12, line 3,

specifically column 10, line 46-column 11, line 4]

Claim 15 is rejected under 35 USC 102(b) since claim 15 contains the same

limitations as recited in claim 16.

Regarding claim 17, Naron discloses a method according to Claim 8, wherein

said each data message bears a corresponding logical timestamp, said logical

timestamp including a most recent sequence number known to original sender of said

each data message when said each data message was first sent. [column 8, line 62-

column 9, line 12; column 21, lines 1-17]

Claim 18 is rejected under 35 USC 102(b) since claim 18 contains the same

limitations as recited in claim 17.

Regarding claim 19, Naron discloses a method according to Claim 18, further

comprising the step of the data servers deleting said stored messages that have logical

checkpoints older by a maximum logical lifetime number at the time of deletion than a

most recent sequence number known at the time of deletion. [column 14, line 64-

column 15, line 12]

Regarding claim 20, Naron discloses a method according to Claim 14, further

comprising the step of said data servers deleting the stored data messages that are

older than the latest checkpoint. [column 11, lines 5-16]

Regarding claim 21, Naron discloses a method according to Claim 16, wherein

the multicast group further includes stable storage writeable by said sequencer, said

method further comprising the step of said sequencer storing in said stable storage said

assigned sequence number before said step of notifying the commit servers. [column

19, lines 21-38]

Claim 22 is rejected under 35 USC 102(b) since claim 22 contains the same

limitations as recited in claim 21.
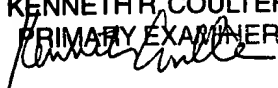
Conclusion

4.   **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time

policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE

MONTHS from the mailing date of this action. In the event a first reply is filed within

TWO MONTHS of the mailing date of this final action and the advisory action is not

mailed until after the end of the THREE-MONTH shortened statutory period, then the

shortened statutory period will expire on the date the advisory action is mailed, and any

extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later

than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to George C Neurauter, Jr. whose telephone number is 703-305-4565. The examiner can normally be reached on Mon-Fri 9am-5:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Wiley can be reached on 703-308-5221. The fax phone numbers for the organization where this application or proceeding is assigned are 703-746-7239 for regular communications and 703-746-7238 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-746-7240.

KENNETH R. COULTER
PRIMARY EXAMINER

gcn
August 11, 2003